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JBH:cmw 07/05/07 739-73364-01 701699 P17499US - LDH/APH/md

PATENT
Attorney Reference No. 739-73364-01**KLARQUIST SPARKMAN, LLP**16th Floor World Trade Center, 121 S.W. Salmon Street, Portland, Oregon 97204 U.S.A.
PHONE: 503-503-5300 FAX: 503-595-5301**PLEASE DELIVER DIRECTLY TO: Customer Corrections**

Fax No.: 571-273-8300

Total No. Pages: **15** including this cover sheet

Message: Transmitted herewith for filing in the above-identified application is a Request for Corrected Official Filing Receipt and attached Exhibit A. If you do not receive all pages or if you have problems receiving transmittal, please call Christine M. Wolfe at (503) 595-5300.

In re application of: Paul Ramond Smith

Application No. 10/574,408

Filed: March 30, 2006

Confirmation No. 7547

For: SELF-LUBRICATING BEARINGS

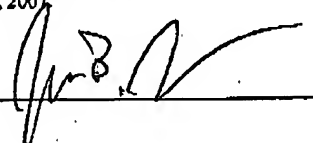
Examiner: Yet To Be Assigned

Art Unit: 3673

Attorney Reference No. 739-73364-01

CERTIFICATE OF MAILING

I hereby certify that this correspondence and any documents referred to as being transmitted herewith are being facsimile transmitted to the Patent and Trademark Office via 571-273-8300 on July 6, 2007.

Attorney or Agent
for Applicant(s)**SECOND REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT**COMMISSIONER FOR PATENTS
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Applicant has received the official Corrected Filing Receipt for the application referenced above, a copy of which (with requested correction) is attached as Exhibit A.

The following errors appear on the Filing Receipt:

(1) Under the Section "Foreign Applications" the following priority information should be included:

"This application claims priority to GB 0323095.0 10/03/2003"

Applicant submits as Exhibit B the cover page of the prior international application, the

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Preliminary Amendment and the Combined Declaration and Power of Attorney, all of which include the foreign priority claim.

Applicant requests that the above-identified errors be corrected and that a new official Filing Receipt be issued.

No fee should be required for this filing. The Director is hereby authorized to charge any fee that may be required in connection with this filing, or credit any overpayment, to Deposit Account No. 02-4550.

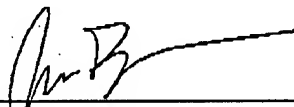
Please call the undersigned if any further information is required.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

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By



Jeffrey B. Haendler
Registration No. 43,652

cc: Docketing

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003/015

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Forrester's / JBH



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APPL NO.	FILING OR 371(c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLMS	IND CLMS
10/574,408	03/30/2006	3673	900	7397336401	19	3

CONFIRMATION NO. 7547

CORRECTED FILING RECEIPT



OC000000023860737

24197
KLARQUIST SPARKMAN, LLP
121 SW SALMON STREET
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PORTLAND, OR 97204

PREVIOUSLY SUBMITTED

Date Mailed: 05/15/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Paul Raymond Smith, Lincoln, UNITED KINGDOM;

Power of Attorney: The patent practitioners associated with Customer Number 24197.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/GB04/03908 09/13/2004

Foreign Applications

This application claims the benefit of GB 0323095.0 Filed 10/2/03

If Required, Foreign Filing License Granted: 10/04/2006

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US10/574,408**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

EXHIBIT A

Self-lubricating bearings

Preliminary Class

277

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process simplifies the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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Title 35, United States Code, Section 184
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(74) Agent: FORRESTER KETLEY & CO; Forrester House,
52 Bounds Green Road, London N11 2BY (GB).

(21) International Application Number: PCT/GB2004/003908

(22) International Filing Date:
13 September 2004 (13.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 0323095.0 2 October 2003 (02.10.2003) GB

(71) Applicant (for all designated States except US):
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Miyota-Machi Kitasaku-gun, Nagano 389-0293 (JP).

(72) Inventor; and

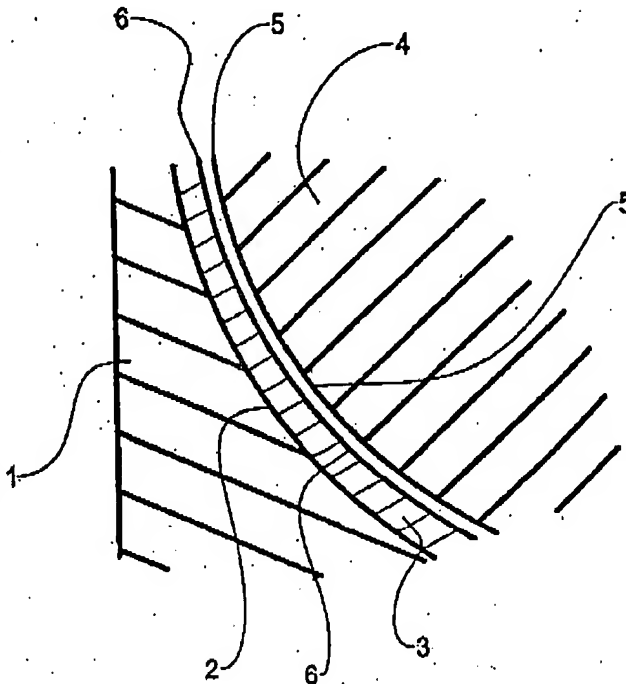
(75) Inventor/Applicant (for US only): SMITH, Paul, Raymond (GB/GB); NMB-Minebea U.K. Ltd., Doddington Road, Lincoln LN6 3RA (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SELF-LUBRICATING BEARINGS



(57) Abstract: A self-lubricating bearing for use in low pressure, high frequency, small amplitude applications and methods of operating and constructing the same, the bearing having a self-lubricating liner (3) and a counterface surface (5) in close sliding contact therewith, the counterface surface (5) having a surface finish of less than 20nm and a hardness of less than in the region of 1000VHN.

Exhibit B

JBH:jbb 03/30/06 506428 F174990 LDH/APH/md
PATENT

Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Paul Raymond Smith
Application No. Not yet assigned
Filed: Herwith
Confirmation No. Not yet assigned
For: SELF-LUBRICATING BEARINGS
Examiner: Not yet assigned
Art Unit: Not yet assigned
Attorney Reference No. 739-73364-01

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PRELIMINARY AMENDMENT

Prior to examination, please amend the referenced application as follows:

Amendments to the Specification begin on page 2.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3.

Remarks begin on page 6.

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Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

Amendments to the Specification

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On page 1, immediately following the title, please insert the following paragraph:

—This is the U.S. National Stage of International Application No. PCT/GB2004/003908, filed September 13, 2004, which in turn claims the benefit of Great Britain Patent Application No. GB 0323095.0, filed October 2, 2003, hereby incorporated by reference.—

Please insert the Abstract, submitted herewith on a separate page, as page 12 at the end of the application.

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PATENTAttorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908RECEIVED
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Amendments to the Claims

1. (Original) A self-lubricating bearing for use in low pressure, high frequency, small amplitude applications, the bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than in the region of 1000VPN.

2. (Original) A self-lubricating bearing according to Claim 1, wherein the surface finish of the counterface surface is in the range of 5nm to 20nm.

3. (Currently Amended) A self-lubricating bearing according to Claim 1 ~~or 2~~, wherein the counterface surface comprises a coating on a curved surface, the curved surface having an electrolytically ground finish.

4. (Original) A self-lubricating bearing according to Claim 3, wherein the coating over the electrolytically ground finish has a thickness of between 1-5µm.

5. (Currently Amended) A self-lubricating bearing according to Claim 3 ~~or 4~~, wherein the coating is a chemical deposition coating, a physical vapour deposition coating or an ion plating coating.

6. (Currently Amended) A self-lubricating bearing according to ~~any preceding claim~~ Claim 1, wherein the bearing is a spherical bearing.

7. (Original) A self-lubricating bearing according to Claim 6, wherein the spherical bearing includes a ball, the ball providing the counterface surface.

8. (Currently Amended) A self-lubricating bearing according to ~~any preceding claim~~ Claim 1, wherein the operating conditions, in use, are at stresses of less than 35MPa, at a

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PATENT

Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^\circ$ rotation.

9. (Original) A method of constructing a self-lubricating bearing comprising the steps of:

providing a self-lubricating liner with a curved surface;
providing a counterface having a curved surface;
electrolytically grinding the curved surface of the counterface to a surface finish of less than 20nm to produce a counterface surface having a hardness of less than 1000VPN; and
placing the curved surfaces of the liner and the counterface surface in sliding contact with one another.

10. (Original) A method according to Claim 9, wherein the curved surfaces are correspondingly curved surfaces.

11. (Original) A method of operating a self-lubricating bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than 1000VPN, wherein the operating conditions are at stresses of less than 35MPa, at a frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^\circ$ rotation.

12. (Canceled)

13. (New) A method according to Claim 9, wherein the bearing is a spherical bearing comprising a ball, and the counterface is a surface of the ball.

14. (New) A method according to Claim 9, further comprising forming a coating on the curved surface of the counterface, wherein the coating provides the counterface surface in sliding contact with the liner.

JBH:jbh 03/29/06 506428 P174990 LDH/APH/ml
PATENT

Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

15. (New) A method according to Claim 14, wherein the coating is a chemical deposition coating, a physical vapour deposition coating or an ion plating coating.
16. (New) A method according to Claim 9, wherein the counterface surface has a hardness of less than 750VPN.
17. (New) A method according to Claim 14, wherein the coating has a thickness in the range of about 1-5 μ m.
18. (New) A method according to Claim 11, wherein the bearing is a spherical bearing comprising a ball, and the counterface surface is a surface of the ball.
19. (New) A method according to Claim 18, wherein the ball is a heat treated metal ball.
20. (New) A method according to Claim 19, wherein the ball has a physical vapour deposition coating providing the counterface surface in sliding contact with the liner.

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Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

Remarks

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By this amendment, the specification has been updated to reflect prior related applications, to insert the abstract on a separate page, and to amend certain claims of the international application. In particular, claims 3, 5, 6, and 8 are rewritten to depend from a single claim. Also, claim 12 has been canceled and new claims 13-20 have been added.

If any issues remain to be discussed prior to examination, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

By


Jeffrey B. Haendler
Registration No. 43,652

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PATENT

Attorney Reference Number 739-73364-01
Application Number PCT/GB2004/003908

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SELF-LUBRICATING BEARINGS

ABSTRACT

A self-lubricating bearing for use in low pressure, high frequency, small amplitude applications and methods of operating and constructing the same, the bearing having a self-lubricating liner (3) and a counterface surface (5) in close sliding contact therewith, the counterface surface (5) having a surface finish of less than 20nm and a hardness of less than in the region of 1000VPN.

JDH:clm 02/23/06 P17499US Declaration.doc P17499US - LDH/APH/ind

Express Mail Label No. EV629077427US
Attorney Ref. No. 739-73364-01**COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled SELF-LUBRICATING BEARINGS, the specification of which

- ☒ is attached hereto.
- ☐ was filed on _____ as United States Patent Application No. _____.
- ☒ was described and claimed in PCT International Application No. PCT/GB2004/003908, filed on September 13, 2004, and as amended under PCT Articles 19 on _____ (if applicable).
- ☐ and was amended on _____ (if applicable).
- ☐ with amendments through _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56. If this is a continuation-in-part application filed under the conditions specified in 35 U.S.C. § 120 which discloses claims and subject matter in addition to that disclosed in the prior copending application, I further acknowledge the duty to disclose material information as defined in 37 C.F.R. § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) on which priority is claimed:

Number	Country	Day/Month/Year Filed	Claim Priority?
GB 0323095.0	Great Britain	02/October/2003	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

Application Number	Filing Date
--------------------	-------------

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT international application(s) designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose

COMBINED DECLARATION AND POWER OF ATTORNEY -- PAGE 1 of 2

JDH:elm 02/23/06 P17499US Declaration.doc P17499US - LDH/APH/md

Express Mail Label No. EV629077427US
Attorney Ref. No. 739-73364-01

material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Number	Filing Date	Status: patented, pending, abandoned
--------------------	-------------	--------------------------------------

I hereby appoint the practitioners associated with the customer number provided below to prosecute this application, to file a corresponding international application, and to transact all business in the Patent and Trademark Office connected therewith:

Customer Number 24197

I hereby grant the law firm of Klarquist Sparkman, LLP, the power to insert on this Combined Declaration and Power of Attorney any further information which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for submitting this document.

Address all telephone calls to Jeffrey B. Haradler at telephone number (503) 226-7391.

Address all correspondence to the address associated with **Customer Number 24197**, which address is:

Klarquist Sparkman, LLP
121 S.W. Salmon Street, Suite 1600
Portland, OR 97204

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of First or Sole Inventor:	Paul Raymond Smith.
Residence:	Lincoln, Great Britain
Mailing Address:	c/o NMB-Minebea UK Ltd., Doddington Road, Lincoln LN6 3RA, Great Britain
Citizenship:	Great Britain
Inventor's Signature	<u>PR Smith</u> Date <u>22/2/06</u>

COMBINED DECLARATION AND POWER OF ATTORNEY - PAGE 2 of 2